REMARKS

Claims 1, 4, 7, 12-16 and 19-22 are pending in this application. Claims 1, 16, 19, 21 and 22, the independent claims, have been amended to define still more clearly what Applicants regard as their invention. Favorable reconsideration is respectfully requested.

In the outstanding Office Action, Claims 1, 3, 4, 7, 12–16 and 19–22 were rejected under 35 U.S.C. § 112, first paragraph, as not being supported by sufficient written description in the application as filed. Specifically, page 3 of the Office Action states:

> Regarding claims 1, 16, 19, 21, and 22, the language limitations of "wherein the first conversion line converts a substantially minimum input value of a saturation of the image to a substantially minimum output value" and "wherein the second conversion line converts a substantially maximum input value of the saturation of the image to a substantially maximum output value" are not supported in the original disclosure.

Applicants strongly disagree with this assertion, and submit that the above-mentioned features of Claim 1 are supported in the application as originally filed, at least in Fig. 12 and the corresponding description thereof.[1]

As shown in Fig. 12 (reproduced below), a first conversion line for a low saturation side is illustrated by a line from point (0.0, 0.0) to point (0.6, 1.0), and a second conversion line for a high saturation side is illustrated by a line from point (1.0, 1.0) to point (0.0, 0.2). The conversion of a substantially minimum input value of a saturation of the

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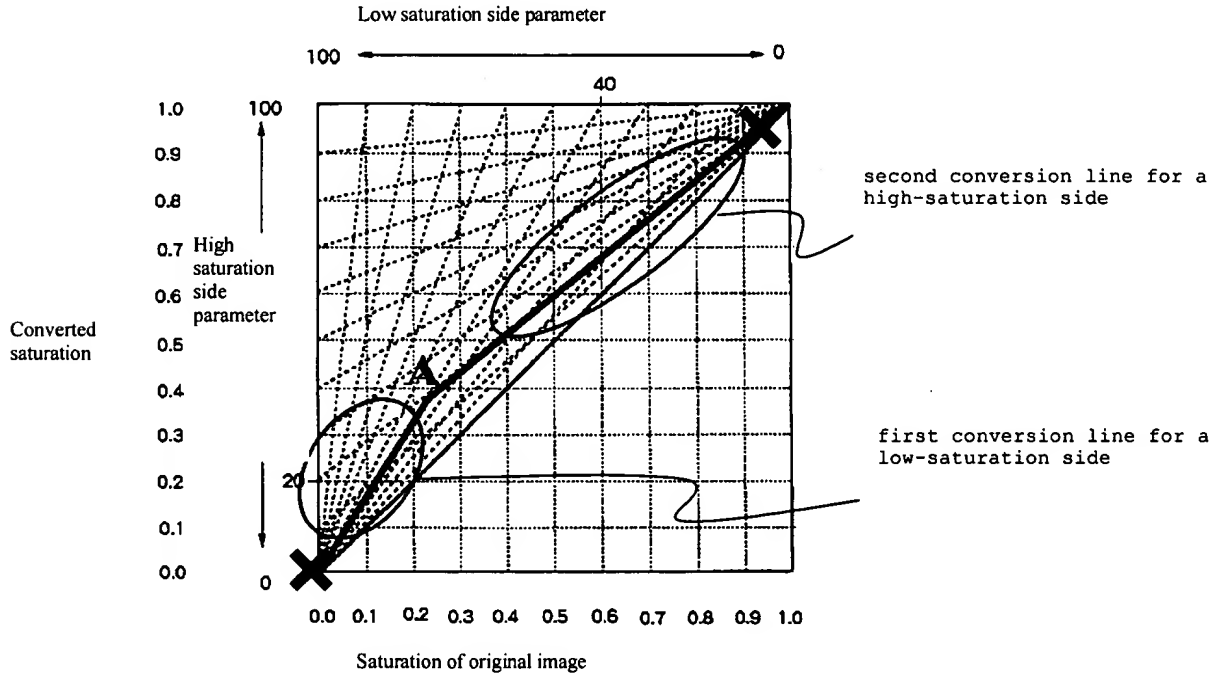
[1] It is of course to be understood that the references to various portions of the present application are by way of illustration and example only, and that the claims are not limited by the details shown in the portions referred to.

image to a substantially minimum output value is illustrated by the index "x" located near point (0.0, 0) of the figure. It is noted that, in the figure, the lower left point of the graph indicated by "x" corresponds to saturation = 0.0 of the original image and to converted saturation = 0.0. (See, e.g., page 18, line 24, to page 19, line 9.) Furthermore, the conversion of a substantially maximum input value of the saturation of the image to a substantially maximum output value is illustrated by the index "x" located near point (1.0, 1.0) of the figure.

Accordingly, it is submitted that the above-mentioned features of Claim 1 are supported at least by Fig. 12 and the description thereof at pages 18 et seq.



Page 3 of the Office Action states:

> Also referring to claim 1, the amended limitation "wherein the second conversion line is set independently of the first conversion line" is not supported by the original disclosure (even as indicated by the Applicant, FIG. 12).

Moreover, page 3 of the Office Action also states (at the top of the page):

> Furthermore, the Examiner does not see how the second conversion line is set independently from the first conversion line since Fig. 12 shows a single curve with changes of slope. It seems that the original disclosure does not support this limitation.

Applicants strongly disagree with these assertions as well, and submit that the above-mentioned feature of Claim 1 is supported by the application as originally filed, at least in Figs. 10 and 12 and the corresponding descriptions thereof.

A low saturation side parameter is determined in step S102 in Fig. 10, and, for instance, a first conversion line for a low saturation side is set by a line from point (0.0, 0.0) to point (0.6, 1.0) in Fig. 12 as a result. In the example shown in Fig. 12, the first conversion line is indicated by a low-saturation side saturation conversion parameter equal to 40. Next, a high-saturation side parameter is determined in step S103 in Fig. 10, and, for instance, a second conversion line for high-saturation side is set by a line from the point (1.0, 1.0) to point (0.0, 0.2) in Fig. 12 as a result. In the example shown in Fig. 12, the second conversion line is indicated by a high-saturation side saturation conversion parameter equal to 20. (See, e.g., page 19, lines 19-25.)

Since these two lines cross at point A in Fig. 12, the final conversion line is represented by a bold line as shown in the figure. Accordingly, it is submitted that both conversion lines are set independently. Moreover, Claim 1 has been amended to make this clear,

in that, on the basis of the first and second conversion lines, the saturation conversion characteristic generating unit generates saturation conversion characteristics. In this regard, Applicants note that the specification states at page 20, lines 1-12:

> Based on these two conversion lines corresponding to the low- and high- saturation side conversion parameters, saturation conversion characteristics actually used in the saturation conversion process are calculated. In Fig. 12, these two lines cross at point A. Hence, in step S104, a line that connects the origin (0.0, 0.0), point A, and the upper right point (1.0, 1.0) of the graph is calculated as the saturation conversion characteristics, and the saturation (S) component of the HLS data converted in step S101 undergoes saturation conversion based on the calculated characteristics.

In this way, it is clear that the final conversion line (the bold line in Fig. 12) represents the generated saturation conversion characteristics, and is based on the first and second conversion lines, as explained. Accordingly, it is submitted that the two conversion lines are set independently of each other.

In view of the foregoing, withdrawal of the rejection under Section 112, first paragraph, is respectfully requested.

In the outstanding Office Action, Claims 1, 4, 7, 12–16 and 19–22 also were rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent 6,031,543 (Miyashita et al.). Applicants strongly believe, however, that each of the independent claims is clearly allowable over that patent, for at least the following reasons.

Independent Claim 1 is directed to an image processing apparatus that comprises a saturation calculation unit, arranged to calculate saturation information of an image, and first and second setting units. The first setting unit is arranged to set a first conversion line for a low-

saturation side, the first conversion line converting a substantially minimum input value of a saturation of the image to a substantially minimum output value, and the second setting unit sets a second conversion line for a high-saturation side, the second conversion line converting a substantially maximum input value of the saturation of the image to a substantially maximum output value. According to Claim 1, it should be noted that the second conversion line is set independently of the first conversion line. In addition, the apparatus comprises a saturation conversion characteristic generating unit, arranged to generate saturation conversion characteristics on the basis of the first conversion line for the low-saturation side, and the second conversion line for the high-saturation side, and a saturation conversion unit, arranged to convert the saturation of the image on the basis of the saturation conversion characteristics.

Page 3 of the Office Action states:

> In addition, FIG. 16, FIG. 27C, FIG. 29, AND FIG. 31 clearly shows the concept of the second conversion line is set independent of the first conversion line which is shown by the Applicant, FIG. 12 of the original specification, since the conversion lines of these Figures are the same comparing to the conversion line of FIG. 12, original disclosure.

The general nature of Miyashita et al. has been discussed adequately in previous papers, and it is not believed to be necessary to repeat that discussion. Applicants will, however, proceed to specifically discuss each of the above-cited figures (Figs. 16, 27C, 29, and 31) in detail.

Fig. 16 of Miyashita et al. is a diagram showing a correction method in the Lab color space. Column 8, lines 15-24 states regarding Fig. 16:

> In FIG. 16, of image data of a slightly fogged color photo, L data 101 is copied as it is and a data 102 and b data 103 are changed according to conversion curves 104 and 105, respectively, thus producing a color photo with no fog or with enhanced saturation.
>
> To correct fogging, the user provides an instruction to move the reference circle 106 in the a*b* plane displayed within the window on the screen of the display 11 in the direction opposite to that of the fogged color. By way of example, to remove yellowish-green fog, the user simply moves the reference circle 106 in the direction of purple. To correct saturation, the user provides an instruction to change the size of the reference circle. For example, in order to enhance the saturation of the entire image, the user simply enlarges the reference circle.
>
> The gradation converter 33 in the retouch processing section 32 automatically calculates the conversion curves 104 and 105 on the basis of the position and size of the reference circle thus changed and then corrects the a* data 102 and the b* data 103 using the resulting conversion curves.

As can be seen, in Fig. 16 of Miyashita et al., the user can either correct fogging by moving a reference circle 106, or correct saturation by changing the size of the reference circle 106. However, the conversion curves of "a" and "b" (104 and 105, respectively) correspond to only a single parameter, and both the low-saturation side and the high-saturation side are converted using only that single parameter, i.e. the change in size of the reference circle. Nothing in Fig. 16 of Miyashita et al. would teach or suggest generating saturation conversion characteristics on the basis of a first conversion line for a low-saturation side, and a second

conversion line for a high-saturation side, in which the second conversion line is set independently of the first conversion line.

Fig. 29 of Miyashita et al. is a diagram showing a first example of a process of specifying intensity. Column 9, lines 56-63, of that patent states:

> FIGS. 29 and 30 show examples of conversion curves the specified conversion intensity of which differs from each other. In the case of FIG. 29, the operating lever 117 is shifted in the positive direction, so that the half tone curve swells upward to form a curve of the middle up type shown in FIG. 27C. In the case of FIG. 30, on the other hand, the lever is shifted in the negative direction, so that the half tone curve swells downward to form a curve of the middle down type shown in FIG. 27D. For any other routine curve as well, it is made available in two types by the same operation.

Therefore, in Fig. 29 of Miyashita et al., when an operating lever 117 is shifted in the positive direction, the half tone curve swells upward to form a curve of the middle up type shown in Fig. 27C. However, the half tone curve corresponds to only a single parameter controlled by operating lever 117, and both the low-saturation side and the high-saturation side are converted using only that single parameter. Since Miyashita et al. does not independently set a first conversion line for a low-saturation side and a second conversion line for a high-saturation side, the Miyashita et al. method is not able to separately manipulate conversion characteristics at a low-saturation side and a high-saturation side.

Fig. 31 of Miyashita et al. is a diagram of an example of a process of specifying a range width. Column 10, lines 34-44 of that patent states:

> FIG. 31 shows an example of a setting of the range width of conversion. In the case of FIG. 31, each of the levers 115 and 113 is shifted by an amount, so that the positions of the input HL and the output HL are changed. In this case, the positions of the input HL and the output HL, i.e., the positions of the levers 115 and 113, represent the lower limit of a range over which a selected curve is applied. The positions of the input SD and the output SD represent the upper limit of that range. Thus, with changing positions of the input HL and the output HL, the range over which the half tone curve is applied in the window 111 changes.

Therefore, Fig. 31 of Miyashita et al. merely shows that the lower and upper limits of a range over which a selected curve is applied can be changed based on changing the positions of the levers. However, while the range width of conversion of a selected curve may be set, Miyashita et al. does not independently set a first conversion line for a low-saturation side and a second conversion line for a high-saturation side. Thus, the Miyashita et al. method is not able to separately manipulate conversion characteristics at a low-saturation side and a high-saturation side.

For all of the foregoing reasons, nothing in Miyashita et al. would teach or suggest generating saturation conversion characteristics on the basis of a first conversion line for a low-saturation side, and a second conversion line for a high-saturation side, in which the second conversion line is set independently of the first conversion line, as recited in Claim 1. Much less would Miyashita et al. teach or suggest setting a first conversion line for a low-saturation side, wherein the first conversion line converts a substantially minimum input value of a saturation of

the image to a substantially minimum output value, and setting a second conversion line for a high-saturation side, wherein the second conversion line converts a substantially maximum input value of the saturation of the image to a substantially maximum output value, as recited in Claim 1.

Accordingly, for all these reasons, it is believed plain that Claim 1 is allowable over Miyashita et al.

Each of the other independent claims recites features similar to those discussed above with regard to Claim 1, and each is deemed allowable over *Miyashita* at least by virtue of the arguments advanced above with regard to that claim.

A review of the other art of record has failed to reveal anything which, in Applicants' opinion, would remedy the deficiencies of the art discussed above, as a reference against the independent claims herein. Those claims are therefore believed patentable over the art of record.

The other claims in this application are each dependent from one or another of the independent claims discussed above and are therefore believed patentable for the same reasons. Since each dependent claim is also deemed to define an additional aspect of the invention, however, the individual reconsideration of the patentability of each on its own merits is respectfully requested.

In view of the foregoing amendments and remarks, Applicants respectfully request favorable reconsideration and early passage to issue of the present application.

Applicants' undersigned attorney may be reached in our New York Office by telephone at (212) 218-2100. All correspondence should continue to be directed to our address listed below.

Respectfully submitted,

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